



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,204	03/25/2005	Masakazu Kawano	26688U	4775
20529	7590	10/17/2007		
NATH & ASSOCIATES 112 South West Street Alexandria, VA 22314			EXAMINER COLILLA, DANIEL JAMES	
			ART UNIT 2854	PAPER NUMBER
			MAIL DATE 10/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,204

Applicant(s)

KAWANO, MASAKAZU

Examiner

Daniel J. Colilla

Art Unit

2854

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 5, 6, 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-12, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1-2 and 4 are objected to because of the following informalities:

In claim 1, line 6, applicant recites, "a conveying member disposed so as to face the fixing member over the conveyance path." However, it appears, from Figure 5 of applicant's drawings that the conveying member 75 is actually disposed *under* the conveying path.

There is a similar problem with claim 15.

In claim 2, line 3, "its rotary shaft" has no antecedent basis in the claims. Applicant has not previously recited any rotary shafts.

In claim 4, the remainder of the claim beginning with "transmits the fixing member. . ." does not appear to be grammatically correct and appears to be missing some language. The claim would be clearer if applicant recited, --and transmits through the fixing member--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

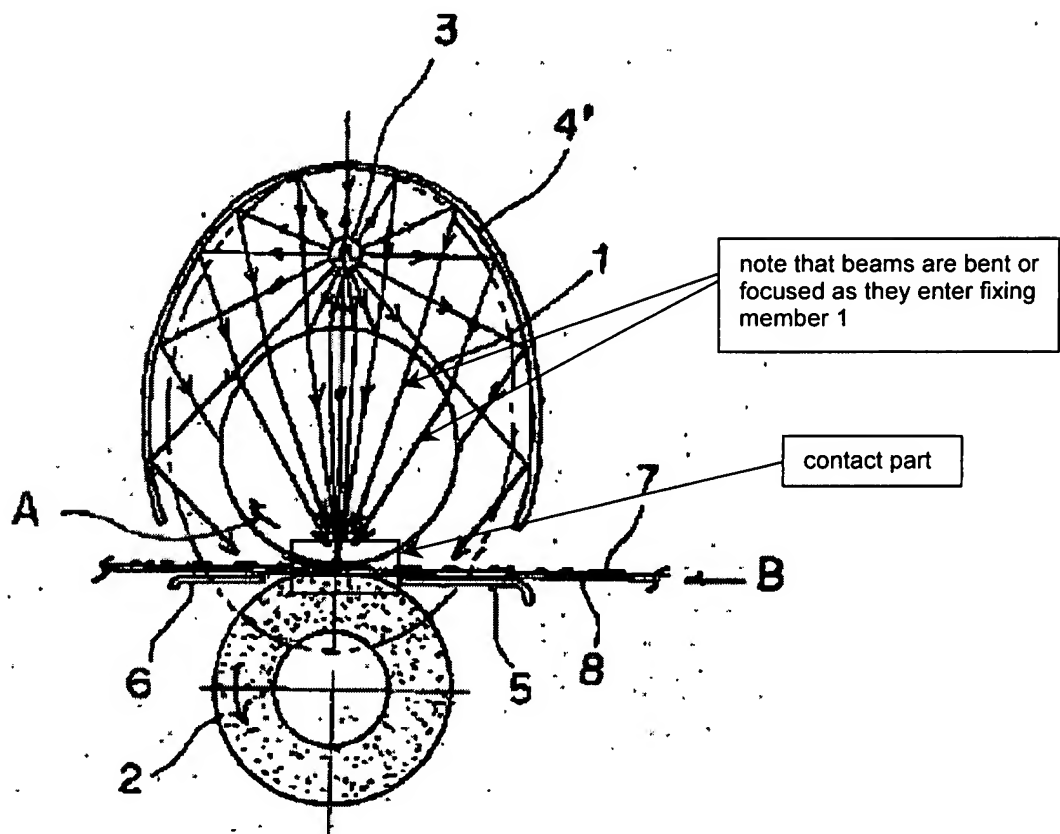
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 7, 9, 11-12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato *et al.* (JP 09-114307) in view of Payne *et al.* (US 6,837,839).

Art Unit: 2854

With respect to claim 1, Kato *et al.* discloses the claimed apparatus except for the inks being photocurable. Kato *et al.* discloses an apparatus for fixing inks including a light source 3 for irradiating light for fixation to a recording side of a recording medium 8 printed with an ink 7; a fixing member 1 (1' as mentioned in translated text of Kato *et al.*) which is disposed in a conveyance path of the printed recording medium, is formed in a cylindrical shape, and can transmit and focus the light for fixation as shown in the below Figure taken from Figure 2 of Kato *et al.*:

【図2】



Art Unit: 2854

Kato *et al.* further discloses a conveying member 2 disposed so as to face the fixing member over the conveyance path; and a pressurizing unit for nipping the fixing member and the conveying member. It is noted that while Kato *et al.* does not show a pressurizing unit in the Figures, paragraph [0024] of Kato *et al.* discloses that roller 2 is an application of pressure roller and contacts fixing member 1 with a predetermined pressure. Additionally Kato *et al.* discloses that the recording medium is conveyed between the fixing member 1 and the conveying member 2 nipped by the pressurizing unit, the fixing member and the recording side of the recording medium are made come into tight contact with each other, and the light for fixation which transmits through the fixing member is focused on a contact part between the fixing member and the recording side of the recording medium to thereby cure/fix the ink printed on the recording side of the recording medium (Kato *et al.*, paragraph [0027]).

Kato *et al.* teaches using light and heat to fix the ink. However, Payne *et al.* teaches that it is known to use a photocurable ink and UV light to cure an ink (Payne *et al.*, col. 2, lines 62-67). Additionally, Payne *et al.* teaches a cylindrical fixing member 18 and a conveying member 19 for nipping, conveying and curing a recording medium as shown in Figure 3 of Payne *et al.* It would have been obvious to combine the teaching of Payne *et al.* with the apparatus disclosed by Kato *et al.* for the advantage of curing printed images at reduced power and faster speeds (Payne *et al.*, col. 6, lines 49-52).

With respect to claim 3, while Kato *et al.* does not explicitly mention that the peripheral velocity of each of the fixing member and the conveying member is equal to conveyance speed of printed recording medium, this is standard practice in fixing devices. Fixing devices must

inherently have such speeds in order to avoid smearing the printed images on the recording medium.

With respect to claim 4, as shown in the above Figure taken from Kato *et al.*, the light source 3 is disposed on the outside of the fixing member 1. The light for fixation is incident on the fixing member 1 from the side opposite to the nipped part of the mixing member and the conveying member. The light transmits through the fixing member as represented by the arrows in the above Figure. And the contact part between the fixing member and the recording side of the recording medium is irradiated by the light for fixation.

With respect to claim 7, Payne *et al.* teaches that the fixing member 18 is made of a material which can transmit light whose wavelength is 10-400 nm (a portion of which falls between 200 and 1300 nm) (col. 5, lines 4-8).

With respect to claim 9, while neither Kato *et al.* or Payne *et al.* explicitly disclose a driving device which rotates the fixing member, such a device is inherent so that the rollers may rotate. In other words, there must be a force provided to rotate the fixing member since Kato *et al.* and Payne *et al.* teach that the fixing member rotates. Additionally, as shown in Figure 1 of Payne *et al.*, the recording medium is conveyed through the fixing member 18 and conveying member 19 by the fixing member 18 and conveying member 19.

With respect to claim 11, the structure recited by Kato *et al.* in view of Payne *et al.* in the above rejection of claim 1 is used to carry out the method steps as recited in claim 11.

With respect to claim 12, the structure recited by Kato *et al.* in view of Payne *et al.* in the above rejection of claim 4 is used to carry out the method steps as recited in claim 12.

With respect to claim 15, Kato *et al.* in view of Payne *et al.* discloses all the recited structure as mentioned above with respect to claim 1 and additionally, Kato *et al.* discloses that the fixing structure is used in apparatus is used in electrophotography equipment which is printing equipment (paragraph [0032], lines 1-2). Additionally, Payne *et al.* shows the fixing structure used in a printing apparatus in Figure 1. As mentioned above with respect to claim 1, Payne *et al.* teaches the advantages of printing with a photocurable ink.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato *et al.* (JP 09-114307) in view of Payne *et al.* (US 6,837,839), as applied to claim 1 above, and further in view of Saito (JP 05-024222).

Kato *et al.* in view of Payne *et al.* discloses the claimed apparatus as mentioned above but it is not explicitly disclosed that the fixing member and conveying member have rotary shafts. Kato *et al.* discloses that the fixing member and conveying member are disposed in a direction orthogonal to a conveyance direction of printed recording medium. Payne *et al.* shows that the overall length of the members in the rotary shaft direction is equal to or larger than width in the direction orthogonal to the conveyance direction of the recording medium as shown in Figure 1 of Payne *et al.* Kato *et al.* discloses that the fixing member is a roller and that conveying member 2 is a roller. Such structures typically have rotary shafts, however, this is not made clear in Kato *et al.* However, Saito teaches a fixing member and conveying member that have shafts as shown in Figures 1 and 2 of Saito. It would have been obvious to combine the teaching of Saito with the apparatus disclosed by Kato *et al.* in view of Payne *et al.* because fixing members with rotary

shafts are an industry standard and other parts of the fixing apparatus and image forming member would be designed to operate with such shafts.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato *et al.* (JP 09-114307) in view of Payne *et al.* (US 6,837,839), as applied to claim 1 above, and further in view of Bartscher *et al.* (US 6,661,993).

Kato *et al.* in view of Payne *et al.* disclose the claimed apparatus except for the quartz glass. Kato *et al.* discloses that the fixing member may be made of glass (Kato *et al.*, paragraph [0024]), but does not specify what type of glass. However, Bartscher *et al.* teaches a fixing member for transmitting light that is made of quartz glass in col. 6, lines 28-31. It would have been obvious to combine the teaching of Bartscher *et al.* with the apparatus disclosed by Kato *et al.* in view of Payne *et al.* for the advantage of quartz having a high light transmittance and low cost.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato *et al.* (JP 09-114307) in view of Payne *et al.* (US 6,837,839), as applied to claim 1 above, and further in view of Nakajima (JP 09-141190).

Kato *et al.* in view of Payne *et al.* discloses the claimed apparatus except that they are silent on whether the photocurable ink is a radical polymerization ink. Payne *et al.* teaches an ultraviolet curable ink as mentioned in col. 5, lines 1-12. Nakajima teaches an apparatus for fixing photocurable inks wherein the light for fixation is ultraviolet light and the photocurable ink is ultraviolet-curing radical polymerization ink (see abstract of Nakajima). It would have

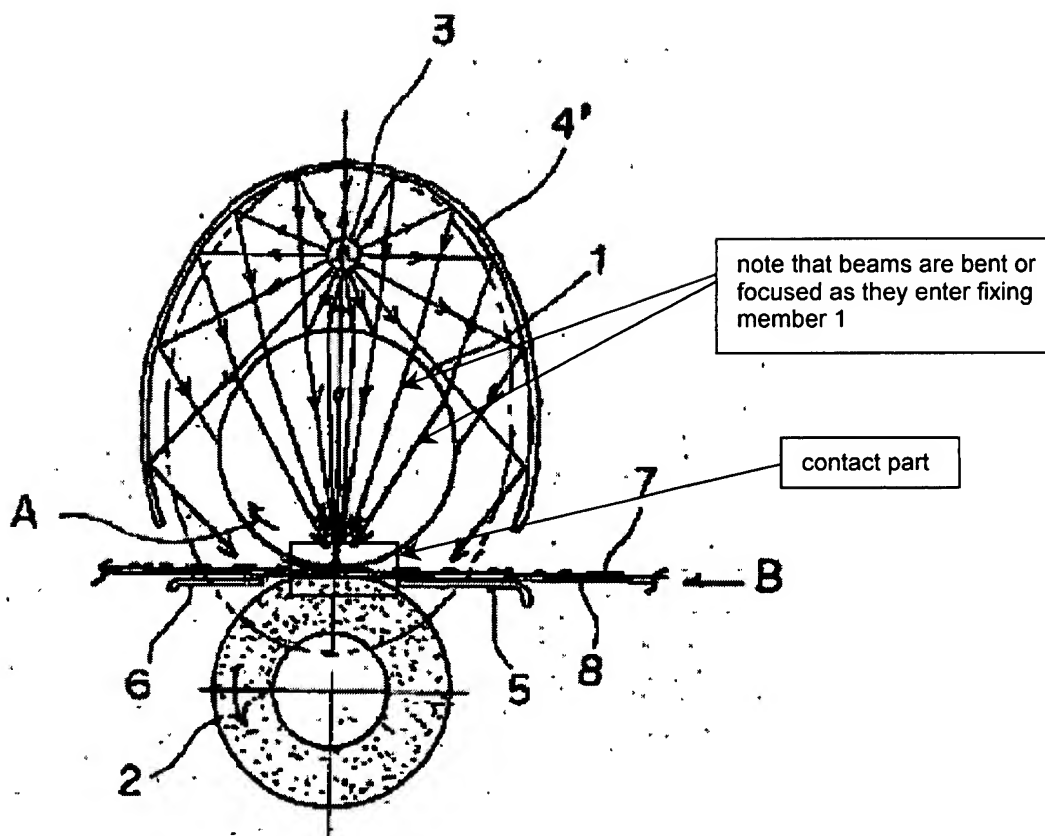
Art Unit: 2854

been obvious at the time the invention was made to combine the teaching of Nakajima with the apparatus disclosed by Kato *et al.* in view of Payne *et al.* for the advantage of the energy savings taught by Nakajima and the ability to multicoat the ink.

7. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato *et al.* (JP 09-114307) in view of Nagasaka (JP 01-133746).

With respect to claim 15, Kato *et al.* discloses the claimed apparatus except for the inks being photocurable. Kato *et al.* discloses an apparatus for fixing inks including a light source 3 for irradiating light for fixation to a recording side of a recording medium 8 printed with an ink 7; a fixing member 1 (1' as mentioned in translated text of Kato *et al.*) which is disposed in a conveyance path of the printed recording medium, is formed in a cylindrical shape, and can transmit and focus the light for fixation as shown in the below Figure taken from Figure 2 of Kato *et al.*:

【図 2】



Kato *et al.* further discloses a conveying member 2 disposed so as to face the fixing member over the conveyance path; and a pressurizing unit for nipping the fixing member and the conveying member. It is noted that while Kato *et al.* does not show a pressurizing unit in the Figures, paragraph [0024] of Kato *et al.* discloses that roller 2 is an application of pressure roller and contacts fixing member 1 with a predetermined pressure. Additionally Kato *et al.* discloses that the recording medium is conveyed between the fixing member 1 and the conveying member 2 nipped by the pressurizing unit, the fixing member and the recording side of the recording medium are made come into tight contact with each other, and the light for fixation which

Art Unit: 2854

transmits through the fixing member is focused on a contact part between the fixing member and the recording side of the recording medium to thereby cure/fix the ink printed on the recording side of the recording medium (Kato *et al.*, paragraph [0027]). Additionally, Kato *et al.* discloses that the fixing structure is used in apparatus is used in electrophotography equipment which is printing equipment (paragraph [0032], lines 1-2). It would have been obvious to combine the teaching of

Kato *et al.* teaches using light and heat to fix the ink. However, Nagasaki teaches printing, with a printer 4, a photocurable ink that is cured with a UV lamp in a fixing member 1 as shown in Figure 1 and mentioned in the abstract of Nagasaki. It would have been obvious to combine the teaching of Nagasaki with the apparatus disclosed by Kato *et al.* for the advantage of curing printed images without heat thus reducing energy usage and reducing the risk of fire when a sheet jams in the fixing device.

With respect to claim 16, Nagasaki teaches that the printing unit 4 forms an image with the photocurable ink on an outer peripheral side of the fixing member 1 such that the recording medium 9 is conveyed between the fixing member 1 having the outer peripheral side on which the image is formed with the photocurable ink and a conveying member 6 which are nipped by a pressurizing unit (inherent in order to apply a nipping pressure). With the fixing structure disclosed by Kato *et al.*, the ink would be cured while transferring it onto the recording side of the recording medium, and the photocurable ink transferred on the recording side of the recording medium is cured/fixed.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shinozaki is cited to show another example of a fixing member used to focus fixing light from a source located above the fixing member.

Response to Arguments

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2854

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Colilla whose telephone number is 571-272-2157. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached at 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

October 11, 2007



Daniel J. Colilla
Primary Examiner
Art Unit 2854